

Amendments to the Claims

Claims 1-10. (Cancelled)

11. (New) A rotary friction welding process for joining or connecting components, wherein a first component is moved rotationally, wherein a second component is stationary, wherein the rotating component and the stationary component are pressed against one another with a specific force, wherein joining surfaces of the components being connected are adapted to one another and a connection bead is formed in an area of the joining surfaces, wherein a relative position between the components being connected to one another is measured, and wherein then, when a pre-specified relative position is reached, the stationary component is released in such a way that it rotates jointly with the rotating component, wherein, in addition, a compression between the components being connected to one another is measured, and that the stationary component is not released until the pre-specified relative position and a pre-specified compression are reached.

12. (New) The rotary friction welding process according to Claim 11, wherein two rotationally symmetrical components are connected to one another in such a way that respective longitudinal axes of the two components are stacked or coincide, and wherein in a circumferential direction the pre-specified relative position is maintained between the two components.

13. (New) The rotary friction welding process according to Claim 12, wherein the pre-specified relative position is a pre-specified angularity.

14. (New) The rotary friction welding process according to Claim 13, wherein the two components being connected to one another are embodied as integrally bladed rotor disks, wherein the angularity, in the circumferential direction between the two rotor disks is determined by a desired relative blade position of the two rotor disks.

15. (New) The rotary friction welding process according to Claim 11, wherein when both components are connected to one another and rotating jointly, an additional compression between the components occurs.

16. (New) The rotary friction welding process according to Claim 15, wherein the additional compression results from the two components pressing against one another with a specific force.

17. (New) The rotary friction welding process according to Claim 11, wherein the pre-specified relative position at which the stationary component is released when the pre-specified compression is reached, is determined at least as a function of a respective mass of the two components and as a function of a rotational speed of the rotating component directly before the release of the stationary component.

18. (New) The rotary friction welding process according to Claim 11, wherein the relative position and the compression between the components being connected to one another is measured online during the friction welding process.

19. (New) A rotary friction welding machine for joining two components, with a first spindle and a second spindle, wherein a first component of the components being connected to one another is positioned on the first spindle and a second component of the components being connected to one another is positioned on the second spindle, and with a device which presses the first component and the second component against one another, or on one another, with a specific force for rotary friction welding, and with at least one measuring device for monitoring a relative position in a circumferential direction between the components being connected to one another, and with a holding device for the second spindle, wherein the second spindle is blocked from rotating by the holding device, and wherein when a pre-specified relative position of the components being connected to one another is reached, the holding device is releasable such that the second component rotates jointly with the first component, wherein, in addition, at least one measuring device for monitoring a compression between the components

being connected to one another is included, wherein the holding device cannot be released until the pre-specified relative position and a pre-specified compression of the components being connected to one another are reached.

20. (New) The rotary friction welding machine according to Claim 19, wherein the two spindles are each positioned on a low-friction axial bearing.

21. (New) The rotary friction welding machine according to Claim 19, wherein the blocking and the releasing of the second spindle is accomplished via a magnetic holding device, for which a polarity is reversible to release the second spindle and which serves as a magnetic bearing after the polarity is reversed.

22. (New) A rotary friction welding process, comprising the steps of:

compressing a first component rotating on a first rotating spindle against a second component positioned on a second spindle that is stationary;

measuring a relative position between the first and second components;

measuring a compression force between the first and second components;

and

rotating the second spindle such that the second component rotates jointly with the first component when a pre-specified relative position and a pre-specified compression are measured.

23. (New) The method according to Claim 22, wherein the step of rotating the second spindle includes the step of releasing a holding device that is engageable with the second spindle.

24. (New) The method according to Claim 23, wherein the holding device includes a first electromagnet and a second electromagnet.

25. (New) The method according to Claim 24, wherein the step of releasing the holding device includes the step of reversing a polarity of the first and second electromagnets.

26. (New) The method according to Claim 22, further comprising the step of applying a second compression force to the first and second components after the step of rotating the second spindle.

27. (New) The method according to Claim 26, wherein the second compression force is greater than the compression force.

28. (New) The method according to Claim 22, further comprising the step of defining the pre-specified relative position as a function of a mass of the first and second components and as a function of a rotational speed of the rotating first component directly before a time when the second spindle begins to rotate.

29. (New) An apparatus for rotary friction welding, comprising:

 a first component positioned on a first rotatable spindle;

 a second component positioned on a second rotatable spindle; and

 a holding device engageable with the second rotatable spindle;

 wherein the holding device disengages from the second rotatable spindle such that the second rotatable spindle rotates jointly with the first rotatable spindle when a pre-specified relative position and a pre-specified compression are measured between the first and second components.

30. (New) The apparatus according to Claim 29, wherein the holding device includes a first electromagnet and a second electromagnet.

31. (New) The apparatus according to Claim 30, wherein a polarity of the first and second electromagnets is reversed to disengage the holding device from the second rotatable spindle.